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DEEP LEARNING–BASED FRUIT QUALITY ASSESSMENT USING COMPARATIVE CNN ARCHITECTURES AND YOLOV8 DETECTION

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This study proposes a deep learning-based approach for automated fruit quality classification into Good and Bad categories using a labelled image dataset. A comparative evaluation of EfficientNet (EfficientNetB0), MobileNetV2, ResNet50, and a custom 2D CNN was conducted. Experimental results show that ResNet50 achieved the highest training and validation accuracy with stable convergence and minimal overfitting. In addition to these, YOLOv8 was applied for real-time fruit quality detection.